PROC. ENTOMOL. SOC. WASH.
107(1), 2005, pp. 1–6

A NEW BEE OF THE GENUS *CHILICOLA* SPINOLA (HYMENOPTERA: COLLETIDAE: XEROMELISSINAE) FROM CENTRAL MEXICO

Ismael A. Hinojosa-Díaz and Charles D. Michener

Entomology Division, Natural History Museum and Biodiversity Research Center and Entomology Program, Department of Ecology and Evolutionary Biology, University of Kansas, Lawrence, Kansas 66045, USA. (e-mail: hinojosa@ku.edu; michener@ku.edu)

Abstract.—***Chilicola (Hylaeosoma) yanezae*, new species**, the second known Mexican species of the group of *Chilicola megalostigma* Ducke, is described from the mountains in the State of Morelos in central Mexico. It differs from *C. polita* Michener in its smaller size, yellow-testaceous areas on the thorax (only the prothorax of the male), and characters of the hidden sterna of the male.

Resumen.—***Chilicola (Hylaeosoma) yanezae*, especie nueva**, es la segunda especie mexicana del grupo de *Chilicola megalostigma* Ducke, proveniente de las montañas del estado de Morelos en el centro de México. Difiere de *C. polita* Michener en su menor tamaño, tórax (solo protórax en el macho) con áreas de color amarillo o marrón claro y en caracteres de los esternos ocultos del macho.

Key Words: bees, Colletidae, Xeromelissinae, *Chilicola*, taxonomy, Mexico

The Mexican and Central American species of the principally South American genus *Chilicola* Spinola were reviewed by Michener (1994). Five species are included in that paper, all of them found in Mexico. Of these, four are members of the subgenus *Hylaeosoma* (characterized by Michener 1994, 1995, 2000) and one of those, *C. polita* Michener, was segregated as a member of group B, which was called by Brooks and Michener (1999) the group of *C. megalostigma* (Ducke). This group differs from all other *Chilicola* by the smooth, shining body with insignificant microsculpturing between widely spaced punctures on many parts of the body; the strong, lamellate preoccipital carina; the elongate thorax with the dorsal surface of the pronotum about twice as long as the flagellar diameter; and the apical processes on the first two front tarsal segments of the female (illustrated by Brooks and Michener 1999). This distinctive group contains three previously known species, *C. megalostigma* (Ducke) and *stenocephala* Brooks & Michener from South America and *C. polita* which, although rare, ranges from Panama to Tamaulipas, Mexico. We here describe another species of the *C. megalostigma* group; it is from the mountains of Morelos, Mexico, and is a close relative of *C. polita* (although *C. polita* and the Brazilian *C. megalostigma* are even more similar).

Abbreviations used in the description are: S, sternum; T, tergum; F, flagellar segment or flagellomere; OD, ocellar diameter.

Measurements of the holotype are followed in parentheses by those of the two male paratypes (except body length, due to the dissection of one paratype). For the fe-

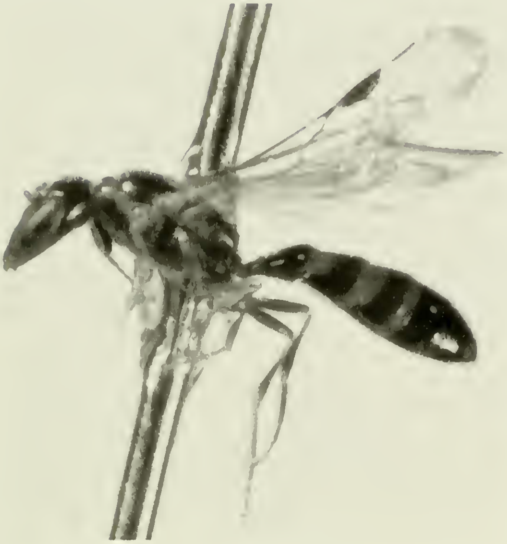


Fig. 1. Lateral view of holotype male of *Chilicola* (*Hylaeosoma*) *yanezae*.

male measurements of both paratypes are provided in parentheses.

The term imbricate, to describe some microsculpturing, is applied following Harris (1979, fig 39).

Details and ecological aspects of the type locality were described by Hinojosa-Díaz (2003).

***Chilicola* (*Hylaeosoma*) *yanezae*,**
new species

(Figs. 1–8)

Chilicola (*Hylaeosoma*) aff. *polita*: Hinojosa-Díaz 2003: 12; Yáñez-Ordóñez and Hinojosa-Díaz 2004: 179.

Diagnosis.—Resembles other species of the *C. megalostigma* group in elongate head and body and shining integument with little and weak microsculpture. Differs from other *Chilicola* in light brown to yellow color of most of pronotum of male and of entire mesosoma except nearly black scutum, scutellum and metanotum of female. Most similar to *C. polita* Michener but smaller, with pale mesosomal coloration described above, with distal thickened apical process of S8 of the male, and rounded rather than angular medial thickenings of S7 of the male (Figs. 4–7).

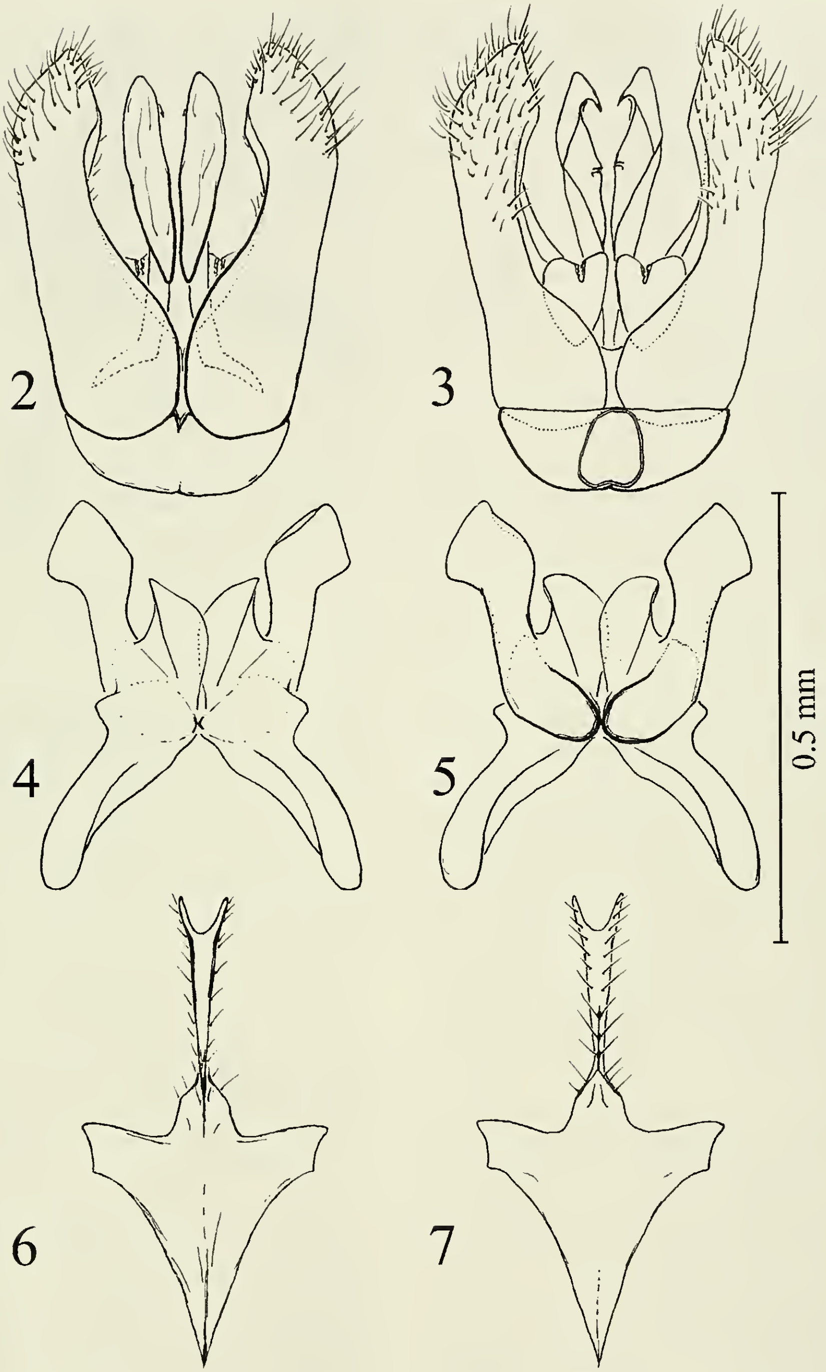
Description.—Male: Body length 5.1 (5.1) mm. *Coloration:* Brownish black, face black, except for brown malar area, distal border of clypeus, labrum, mandible, dorsal border of preoccipital carina; antennal scape and pedicel yellow amber, F1 to F4 light brown or brown, remainder of flagellum brownish black above, brown below, except last segments entirely blackish; mesosoma very dark brown, except central area of pronotal lobe and tegula transparent amber, dorsal area of pronotum light brown, paler laterally and continuing yellow brown to pronotal lobe and posterior third of upper lateral area of pronotum; fore and mid legs yellow amber, with brown to dusky areas on mid femur and mid tibia; apices of pretarsal claws and arolia brown; posterior leg mainly brown with yellow brown on parts of coxa, trochanter, apex of femur, base and apex of tibia; metasomal terga dark brown, except anterior halves of T2 and T3, anterior third of T4 yellow, posterior margins of T1 to T3 yellow brown; S1, S2 transparent dusky amber, S3 yellow amber, S4 to S6 brown; wings transparent with green and red highlights, veins and stigma blackish brown.

Body surface: Polished, without microsculpturing except as indicated below; face with punctures scattered, denser along mid surface between subantenal sulcus and compound eye, as well as on the frons, where separated by less than a puncture width; central part of supraclypeal area impunctate; gena and hypostomal area largely impunctate; mesosoma polished, shiny, with punctures separated by 1 to 2 puncture widths on mesoscutum and by 2 to 3 puncture widths on dorsal area of pronotum, scutellum and metanotum; anteriormost mid surface of mesoscutum minutely imbricate, microsculpturing otherwise absent; mesepisternum largely impunctate; anterior lateral surface of pronotum, metepisternum, lateral and posterior surfaces of propodeum minutely imbricate or lineolate; basal area of propodeum with about 12 longitudinal striae slightly radiating posteriorly; metasomal terga and sterna shiny, each anteriorly transversely lineolate, becoming polished, impunctate posteriorly, particularly on first three metasomal segments.

Pubescence: Hairs minute, sparse, longest on hind tibiae (about 2 OD) and posterior half of metasoma (up to nearly 4 OD). Face with sparse, simple, short, erect, white hairs, longer on clypeus, shorter on frons, minutely branched hairs on edge of preoccipital carina, appressed, more noticeably branched hairs on alveolocular area adjacent to antennal socket; gena with more abundant, longer, minutely branched hairs, especially on posterior half; hypostomal area with sparse, short hairs; pronotum with sparse, short hairs, except pronotal lobe margin and lateral-anterior and posteror borders of pronotum with appressed plumose hairs; mesoscutum and scutellum with sparse, simple, short, erect, white hairs; metanotum with long, erect hairs on sides, becoming shorter and converging mesally; anterior and lower surface of mesepisternum with appressed or erect plumose hairs; metepisternum with dense, long, branched hairs; lateral surface of propodeum with short, simple, suberect hairs, longer and branched on upper border, basal area hairless; terga and sterna with sparse, simple, erect hairs, longer on ventral side and on discs of T4 to T6.

Structure: Head elongate, formed about as in *C. polita* (Brooks and Michener 1999, figs.7,8), length 1.25 (1.26,1.26) mm, width 0.85 (0.87, 0.87) mm, eyes convergent below, upper interorbital distance 0.55 (0.54, 0.57) mm, lower interorbital distance 0.28 (0.30, 0.30) mm, paraocular area with well-developed depression for antennal scape extending to upper ocular tangent; inner border of depression above antennal socket with ovoid protuberance slightly smaller than 1 OD [equivalent to elongate welt described for *C. stenocephala* (Brooks and Michener 1999); this protuberance scarcely evident in male *C. polita*]; F1 shorter than pedicel, about twice as long as broad, F2 to F4 broader than long, F5 as long as broad, remaining segments longer than broad, F11 over twice as long as broad; malar area over twice as broad as long (three times in one paratype); ocelloccipital distance about 1.5 OD measured to apex of high preoccipital carina; genal area above about as wide as eye seen from side, tapering below. Maxillary palpus longer than prementum, about as long as head, first two segments about half length of third, segment 6 slender. Dorsal surface of pronotum continuing curvature of mesoscutum as seen in profile but lower than mid mesoscutum which is nearly four times as long as mid-dorsal pronotum. Legs slender (Fig. 1). Forewing length 3.4 (3.4, 3.6) mm; apex of marginal cell minutely truncate. T1 longer than broad, length 0.78 (0.78, 0.84) mm, width 0.56 (0.57, 0.57) mm, in profile T2 and T3 constricted basally; T7 with apex truncate; posterior half of S6 mesally with flat, shining triangular surface surrounded by hairy areas posterolaterally with small tuft of erect, long, curved hairs (nearly 4 OD). S7, S8 and genitalia as in Figs. 2 to 7; S7 with prominent membranous medial projections, folding towards ventral surface; genitalia with gonoforceps with apex broadly rounded-truncate and produced inward.

Female: As described for male except as follows: Body length (4.68, 5.16) mm. All flagellar segments dusky brown; mesoscutum, scutellum and metanotum dark brown, rest of mesosoma yellow except central area of pronotal lobe and tegula transparent amber, striae of basal area of propodeum brown; mid leg mainly light brown; hind coxa and trochanter yellow; S1 transparent amber, S2 to basal half of S4 yellow amber, rest of sterna brown amber. Scopa well developed on S1 to S3, plumose hairs denser and longer on S2. Head length (1.25, 1.32) mm, width (0.94, 0.96) mm, upper interorbital distance (0.60, 0.60) mm, lower interorbital distance (0.28, 0.30) mm. Protuberance on inner border of depression for antennal scape absent. Forewing length



Figs. 2–7. Male of *Chilicola* (*Hylaeosoma*) *yanezae*. 2–3, Genitalia, dorsal and ventral views. 4–5, S7, dorsal and ventral views. 6–7, S8, dorsal and ventral views.

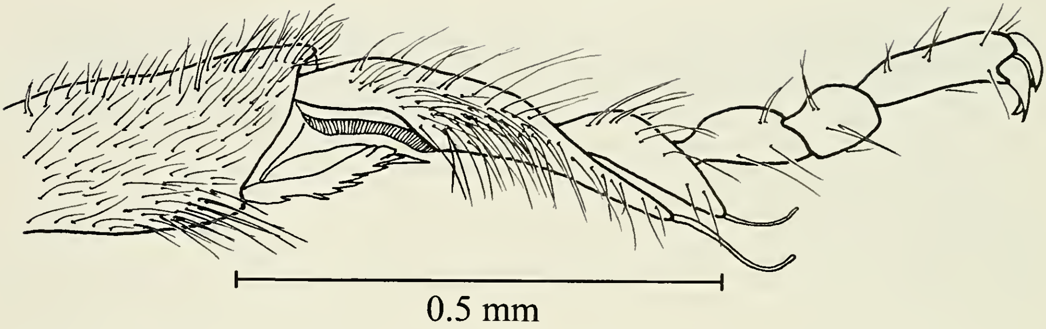


Fig. 8. Inner view of anterior tarsus of female of *Chilicola* (*Hylaeosoma*) *yanezae*.

(3.60, 3.70) mm. Anterior tarsus bristly, tarsomeres 1 and 2 each with apical process and single curved hair at tip (Fig. 8). T1 length (0.84, 0.85) mm, T1 width (0.67, 0.69) mm. Apex of metasoma unmodified.

Type material (all from Mexico).—Holotype male: Km 4.5 Autopista México-Cuautla, Tepoztlán, Morelos. 28/04/1996 [28 April 1996], O. Yáñez OY-602, 1,940 m [meters above sea level] 19°00′15″[N], 99°07′46″[W], Bosque de encino // OY-602// Museo de Zoologia, Hymenoptera, 23868 [Catalog number] // *Chilicola* sp. 3 ♂, Det. T. Griswold 1998, in the Museo de Zoología "Alfonso L. Herrera", Departamento de Biología Evolutiva, Facultad de Ciencias, Universidad Nacional Autónoma de México. Paratypes: 2 ♂, 2 ♀, same locality as holotype, all 17/05/1997 [17 May 1997], I. Hinojosa collector. Two paratypes were collected while in copula. One female paratype on flowers of *Sida rhombifolia* L. (Malvaceae), the other three paratypes on flowers of *Tithonia tubaeformis* (Jacq.) Cass. (Asteraceae). One female paratype in the same institution as holotype. A male paratype in the Division of Entomology, Natural History Museum and Biodiversity Research Center, University of Kansas. The two other paratypes (one of each sex) in the U. S. National Pollinating Insects Collection, USDA Bee Biology & Systematics Laboratory, Utah State University, Logan Utah.

Etymology.—Named in honor of Olivia Yáñez of the Universidad Nacional Autónoma de México, who collected the holotype, and contributed toward preparation of this paper.

ACKNOWLEDGMENTS

For the loan of the specimens used in this description we thank the personnel of the Museo de Zoología "Alfonso L. Herrera," Departamento de Biología Evolutiva, Facultad de Ciencias, Universidad Nacional Autónoma de México. Additional specimens, including a male of *C. polita*, were provided by Terry L. Griswold of the U. S. National Pollinating Insects Collection, USDA Bee Biology & Systematics Laboratory, Utah State University, Logan Utah, who first identified this species as new. Michael S. Engel assisted with the photograph of the holotype.

This is contribution number 3356 of the Division of Entomology, Natural History Museum and Biodiversity Research Center, University of Kansas.

LITERATURE CITED

Brooks, R. W. and C. D. Michener. 1999. The *Chilicola megalostigma* species group and notes on two lost types of *Chilicola* (Hymenoptera: Colletidae, Xeromelissinae). Journal of Hymenoptera Research 8: 132–138.

Harris, R. A. 1979. A glossary of surface sculpturing. Occasional Papers in Entomology. California State Department of Food and Agriculture no. 28: 1–31.

Hinojosa-Díaz, I. A. 2003. Abejas silvestres (Hymenoptera: Apoidea) del declive sur de la Sierra del

Chichinautzin, Morelos, México. Folia Entomológica Mexicana 42: 1–20.

Michener, C. D. 1994. Mexican and Central American species of *Chilicola* (Hymenoptera: Colletidae). Folia Entomológica Mexicana 85(1992): 77–93.

———. 1995. A classification of the bees of the subfamily Xeromelissinae (Hymenoptera: Colletidae). Journal of the Kansas Entomological Society 68: 332–345.

———. 2000. The Bees of the World. Johns Hopkins University Press, Baltimore, xv + 913 pp.

Yáñez-Ordóñez, O. and I. Hinojosa-Díaz. 2004. La colección himenopterológica (Insecta) del Museo de Zoología "Alfonso L. Herrera" de la Facultad de Ciencias, UNAM, México. Acta Zoológica Mexicana (n.s.) 20(1): 167–197.